

## **REMARKS/ARGUMENTS**

Claims 1-3, 6-7, and 9-18 remain in this application. Claims 4, 5, and 8 had been cancelled.

### **1. Claim Rejections Under 35 USC § 103**

The Patent Office has rejected Claims 1-3 and 6 under 35 U.S.C. § 103(a) as being unpatentable over US Patent No. 5,795,188 (Harwath) in view of US Patent No. 4,346,958 (Blanchard).

Regarding Claim 1, the Patent Office asserts that Harwath discloses a coaxial cable having an outer diameter, the coaxial cable including an inner conductor surrounded by an outer conductor 67 and separated therefrom by a dielectric, the inner conductor including an outer surface, the coaxial connector including an inner terminal for receiving an end portion of the inner conductor of the coaxial cable and including an outer terminal for engaging the outer conductor 67, wherein the Patent Office asserts that Harwath discloses a method comprising the steps of: inserting an end portion of the cable through a back nut 62 of the connector, flaring an end portion of the outer conductor to form a flared portion of the outer conductor, the length of the flared portion 35 being smaller than the outer diameter of the coaxial cable, the cable having been inserted through the back nut and securing the flared end portion of the outer conductor between abutting faces of the outer terminal and the back nut, the step of securing comprising axially displacing the back nut towards the outer terminal.

The Patent Office also asserts that Harwath discloses the claimed invention except for a discussion of a method of attachment of coaxial cable and the (expose) removing dielectric from the end portion of the inner conductor of the coaxial cable to expose the outer surface of an end portion of the inner conductor, and to allow the exposed outer surface of the end portion of the inner conductor to engage the inner terminal of the coaxial connector engaging the exposed outer surface of the end portion of the inner conductor with the inner terminal of the coaxial connector and attaching the back nut to the outer terminal of the connector, the cable having been inserted through the back nut.

The Patent Office concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the Harwath connector could involve steps as recited as an efficient way to make the connector, as these appear to be steps that would normally be used but are not explicitly disclosed by the patentee.

The Patent Office further concludes that while the above is adequate, it would have been obvious to form 262, 265 as one (?) piece to simplify the device. The Patent Office further concludes that Blanchard discloses an exposed center conductor at 101, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Harwath to provide the exposed center conductor as taught by Blanchard so as to enable use with a cable having a solid center conductor.

Regarding Claim 2, the Patent Office asserts that Harwath discloses the step of cleaning the end portion of the outer conductor.

Regarding Claim 3, the Patent Office asserts that Harwath discloses the step of removing a portion of the insulating jacket from the end portion of the cable.

Regarding Claim 6, the Patent Office asserts that Harwath discloses shaping the end portion of the outer conductor to correspond with the abutting faces of either the outer terminal or the back nut, or a combination thereof.

Claims 7, 9-11, and 16-18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Harwath. The Patent Office asserts that Harwath discloses the claimed invention except for the first angle surface contact face directly engaging the inner surface of the outer conductor of the coaxial cable and the second angle contact face directly engaging the outer surface of the outer conductor of the coaxial cable. The Patent Office concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to omit beads 100 and form angled surfaces to directly engage outer conductor 131 so as to save the expense of the beads.

The rejections are traversed.

First, Applicant wishes to point out that the outer conductor of the coaxial cable in Harwath is abled with reference numeral 25, not 67 as indicated in the Office Action. Also, there is no reference numeral 265 in Harwath, which appears to be a typographical reference in the Office Action; Applicant will proceed with remarks based on reference numeral 285, not 265.

With regard to the rejection of Claims 1-3 and 6, Applicant submits that Harwath does not teach or even suggest removing dielectric from the end portion of the inner conductor of the coaxial cable to expose the outer surface of an end portion of the inner conductor, and to allow the exposed outer surface of the end portion of the inner conductor to engage the inner terminal of the coaxial connector, as recognized by the Examiner. Applicant respectfully submits that, to the contrary, Harwath teaches the opposite: in the Figures of Harwath, the dielectric is shown intact across the entire end portion of the inner conductor of the coaxial cable, and therefore there is no exposed outer surface of the end portion of the inner conductor of the coaxial cable, and only the inner surface of the end portion of the inner conductor of the cable engages an inner terminal of the coaxial connector. See, for example, Figs. 1, 2, 3, 14 and 15 of Harwath. Also, Harwath discloses a connector for a cable with a corrugated outer conductor, and Harwath teaches away from removing dielectric from around the outer surface of the inner conductor of the cable in its description of preparation of the cable as found in col. 5 lines 63-67 and col. 6 lines 1-10 of Harwath:

“The foam dielectric 29 normally does not fill the crests of the corrugated outer conductor 25, so the inside surface 33 of the flared end portion 31 is exposed. However, if the foam dielectric 29 does fill the flared end portion 31, then a portion of the dielectric 29 should be removed to permit contact with the inside surface 33 of the flared end portion 31.”

Thus, Harwath teaches only removing dielectric from under the end crest so as to permit the leading edge of clamping member 47 to fit thereunder.

Applicant respectfully disagrees that it would have been obvious to form elements 262 and 285 of Harwath as one piece. All of the embodiments of Harwath include an expandable-retractable clamping ring such as a garter spring (85 in Fig. 5), a ring of steel beads joined by an elastomeric material (100 in Fig. 8), or a resilient clamping ring (285 in Fig. 10), disposed between the clamping surface of the back nut and the outer surface of the outer conductor of the cable. The clamping ring is supposed to expand sufficiently to pass over a flared end portion of a coaxial cable, and then the clamping ring contracts or is retracted to fit in a corrugation valley which is adjacent or near to the end of the coaxial cable. The elasticity of the clamping ring is a fundamental feature of Harwath. Furthermore, the back nut of Harwath is cross-hatched to represent that the back nut is made of metal. Accordingly, Applicant respectfully submits that it would not be obvious to form the back nut (which would need to be made of a rigid material like metal) and the clamping ring (which must have resiliency, to be expandable and retractable, provided by a spring member or elastomeric material) together into a single unitary one-piece construction and still retain the fundamental nature of the connector of Harwath.

Furthermore, Blanchard teaches an opposite form of connection between a connector and a cable. Blanchard discloses a hard line coaxial cable connector for use with non-corrugated coaxial cable (not corrugated coaxial cable as in Harwath), and does not involve any flaring whatsoever of the outer conductor of the coaxial cable. Blanchard also teaches connection to a coaxial cable having a solid center conductor, not a hollow center conductor as in Harwath. Additionally, Blanchard teaches preparation of its cable by trimming both the outer conductor and the dielectric of the cable to the same axial extent so as to expose the solid center conductor of the cable. See Fig. 4 and col. 3 lines 62-66 and col. 6 lines 40-44 of Blanchard ("The cable is prepared with the center conductor extending approximately one and three-eighths inches beyond the insulation and the substantially rigid jacket, the jacket typically being a conductive metal tube."; "Cable preparation is easier in that the center conductor need extend beyond the insulation and jacket by only one inch (25.4 millimeter) instead of one and three-eighths inches as has been necessary with prior art connectors.") It should be noted that mandrel 32 of Blanchard is inserted between the cable outer conductor and its dielectric, as understood from Figs. 1 and 4 of Blanchard, and the mandrel should not be confused with outer conductor 102 of the cable in the drawings.

Furthermore, the Blanchard patent issued in 1982, while Harwath did not file an application until 1996, fourteen years later. Coaxial cable having solid center conductors was known at the time of the filing of the Harwath application, yet the Harwath patent is directed to connectors for coaxial cable with hollow inner conductors.

Thus, there is no motivation to combine Harwath and Blanchard to arrive at the presently claimed invention.

With regard to the rejection of Claim 2, Applicant respectfully disagrees that Harwath discloses the step of cleaning the end portion of the outer conductor. Harwath

at col. 5 lines 63-67 and col. 6 lines 1-10 describes preparation of the cable for its connector, which involves cutting the cable and removing a portion of the dielectric that may fill the crest of the corrugated outer conductor, and any burrs or rough edges on the cut ends of the metal conductors are preferably removed to avoid interference with the connector. However, there is no mention of cleaning, such as referred to in the Specification of the present Application on page 4 lines 1-3.

With regard to the rejection of Claims 7, 9-11, and 16-18, Applicant respectfully submits that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to omit beads 100 and form angles surfaces to directly engage outer conductor 131 so as to save the expense of the beads. Harwath discusses beads 100 at col. 7 lines 53-63: "The clamping ring in this embodiment includes a plurality of metal, preferably steel, beads 100 held together by an elastomeric material, preferably a rubber band 110, as shown in FIG. 8." The Summary of the Invention of Harwath, for example, at col. 2 lines 43-49 and lines 58-67, describes the advantages of using such a clamping ring to overcome the disadvantages of the prior art relating to unreliable electrical contact between the flared end portion of the outer conductor and the connector due to bending or twisting of the cable. The Examiner's proposal to omit beads 100 would be directly contrary to the teaching of Harwath for the need for some form of clamping ring to maintain good electrical contact between the connector and the outer conductor of the cable. Omitting beads 100 would degrade electrical contact.

With regard to Claim 18, Harwath teaches that its flared end portion is produced by cutting the end of the cable along a plane extending through the apex of one of the crests of the corrugated outer conductor to produce an end surface perpendicular to the longitudinal axis of the cable. See Harwath at col. 5 lines 63-67 and col. 6 lines 1-2, and col. 7 lines 28-33. Harwath teaches then inserting the nut (front housing) 62 over the flared end portion. See Harwath at col. 7 lines 32-35. Importantly, if the outer conductor of the cable in Harwath were physically deformed such that it has a diameter that exceeds the initial predetermined outer diameter of the outer conductor, then the flared end portion of the cable could not be inserted into back nut (front housing) 62 of Harwath, which has an internal diameter commensurate with the predetermined outer diameter of the outer conductor of the cable (for example in Harwath Fig. 2, the portion of 62 to the right of 85 which is adjacent a crest). The expandable-retractable clamping ring of Harwath (such as garter spring 85) is then manually placed in the corrugation valley adjacent the flared end portion. See for example Harwath col. 7 lines 35-36. Then the nut (front housing) 62 is threaded together with outer terminal (clamping member) 47 to grip the flared end portion. See Harwath col. 7 lines 38-50. Any further physical deformation of the flared portion in Harwath might occur upon or after the flared end portion is so gripped (i.e. after engagement of its back nut on its outer terminal) but not before. Significantly, Harwath does not disclose step a followed by step b followed by step c, as recited in Claim 18 of the present Application.

Similarly, with regard to Claim 1, Harwath does not teach or suggest sequentially inserting a cable through a back nut, then flaring the end portion of the outer conductor of the cable, then removing dielectric to expose the outer surface of the inner conductor of the cable, then attaching the back nut to the outer terminal of the connector. Instead, Harwath teaches producing a flared end portion by cutting the cable at the crest, then inserting the nut over the flared end portion (from which follows that

the flared end portion does not have a diameter that exceeds the initial predetermined outer diameter of the outer conductor), then placing a clamping ring in a valley adjacent the flared end portion, then threading the back nut onto the outer terminal to engage, and apparently physically deform, the flared end portion of the outer conductor of the cable. As discussed above, Harwath teaches possibly removing dielectric to expose the outer conductor, but does not teach or suggest removing dielectric to expose the outer surface of the inner conductor of the cable.

With respect to Claims 7 and 11, Harwath does not teach or suggest a second angled contact face integral with a back, wherein a first angled contact face integral with the outer terminal and the second angled contact face each directly engage the outer conductor of the cable. As discussed above, Harwath requires an expandable-retractable clamping ring, separate from the back nut for reasons discussed above, to directly engage the outer conductor of the cable.

Accordingly, Applicant respectfully submits that all of the rejected claims are not obvious in light of Harwath alone, or in light of Harwath in view of Blanchard for at least the above reasons, and Applicant requests withdrawal of the rejections and allowance of all of the pending claims.

## **2. Allowable Subject Matter**

The Patent Office is thanked for indicating that Claims 12-15 are allowed.

## **3. Conclusion**

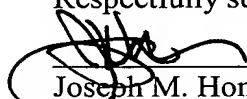
Based upon the above amendments, remarks, and papers of records, Applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Applicant believes that no extension of time is necessary to make this Reply timely. Should Applicant be in error, Applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Joseph M. Homa at 607-974-9061.

DATE: 12/1/05

Respectfully submitted,

  
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